

From glowbugs@theporch.com Wed Dec 20 00:34:48 1995
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Message-Id: <199512200630.AAA16307@uro.theporch.com>
Errors-To: ws4s@midtenn.net
Reply-To: glowbugs@theporch.com
Originator: glowbugs@theporch.com
Sender: glowbugs@theporch.com
Precedence: bulk
From: glowbugs@theporch.com
To: Multiple recipients of list <glowbugs@theporch.com>
Subject: GLOWBUGS digest 52
X-Listprocessor-Version: 6.0c -- ListProcessor by Anastasios Kotsikonas
X-Comment: Please send list server requests to listproc@theporch.com
Status: 0

GLOWBUGS Digest 52

Topics covered in this issue include:

- 1) Re: Best tubes for a VF0?
by rdkeys@csemail.cropsci.ncsu.edu
- 2) Happy Holidays/ZUT DE NA4G/Bob
by rdkeys@csemail.cropsci.ncsu.edu
- 3) Re: Best tubes for a VF0?
by Bill Turner <wrt@eskimo.com>
- 4) 1927 radio book for sale or trade
by mjsilva@ix.netcom.com (michael silva)

Date: Tue, 19 Dec 1995 11:42:54 -0500 (EST)
From: rdkeys@csemail.cropsci.ncsu.edu
To: mjsilva@ix.netcom.com
Cc: rdkeys@csemail.cropsci.ncsu.edu (), glowbugs@theporch.com
Subject: Re: Best tubes for a VF0?
Message-ID: <9512191642.AA103581@csemail.cropsci.ncsu.edu>

>
> Hi all,
>
> Yes, I know you're all out shopping, but I've got a question just the
> same. I have never seen a good discussion of the desired tube
> characteristics for use in a VF0. What I -have- seen is just about
> every imaginable tube type used, making me wonder if it matters all
> that much. So, which is better: triode vs. pentode, sharp-cutoff vs.

> remote cutoff, high gm vs. not-so-high, etc. I'm about to start
> reading up on VFOs again for a new project, so any other advice is also
> welcomed -- it's been a while since I thought about these things.
>
> 73,
> Mike, KK6GM

A triode at low power and loading makes an extremely good vfo. The type 6J5, 6C5, (and probably the 6SN7/6SL7 should work as well, and give a spare tube for class A buffer) has traditionally worked well. The 1626 is the 12v mil equivalent as used in ARC-5's.

For pentodes, I prefer a 6SJ7 at low power or an 837 at higher power. For some reason so did Art Collins and General Electric, respectively. Also General Electric used 860's at the 75watt vfo class, quite effectively.

The remote cutoff tubes seem to have been used more often than semi-remote cutoff tubes in vfo designs. In my hands it makes no real difference.

A 12A6 is quite effective in the 1-3 watt drive class. Again, Art Collins used this design effectively in the TCS equipment.

What do Art Collin's ptos use.... 6AU6 or equivalent, if my memory serves me correctly. That obviously works, but is a bit underpowered without some buffering stages (at least one).

In the modern era, a 6146 would make a good high power vfo. Lightly electron coupled at about 350 volts on the plate and 150 on the screen, it should work rather well, giving about 5 watts useful drive. That is more than sufficient to drive a pair of 813's on the fundamental to half a kilowatt or a triplet of 4X150D's to a full kilowatt. If the power supply is stable, then it can run 10 watts output on higher voltages, but beyond about 350 it becomes more difficult to keep it stable. If your conscience hurts, add a 6146 buffer in class A or class C, depending upon what sort of isolation you think you really need.

In my hands, I get better mileage out of triodes, but that is more my preference. On triodes, just remember to LOOSELY couple at the low end of the tank (rf cold end). On pentodes, choke couple (good) or pi-network couple (better) to the following stage, although, historically, simple mutual coupling through like coils is very common, and occasionally link coupling is used for remote stages separated beyond mutual coupling distances (rare, actually, but it was rather popular in the late 30's and throughout the 40's in ham gear).

The bottom line, basically, is that it does not matter what kind of tube you use. The main consideration is solid tube structure and then secondly solid vfo structure. This means that all wiring should be very firm and mountings likewise. Capacitors should have good contacts with low resistance. Use oversized components throughout in any vfo, by a design factor of at least 10 in terms of current handling capacity and at least 3 in terms of voltage handling capacity. There is an old rule of thumb that states that ``final amplifier type components do well in vfo's''. Cheapness in design after WWII brought about strides to improve stability by other means such as temperature compensation, isolation, etc. But, the basic rule still applies, especially in homebrew gear --- make the muther solid!

Lastly, make sure the power supply is stable and can deliver at least twice the load required of the vfo stage, if it is a separate power supply. If it is of the main power supply, make sure sufficient divider string resistors of sufficient capacity (10 x the power to be dissipated in the string) and of sufficient loading (use vr tubes or load the string down so that the vfo takes only a fraction of the string load) is used to maintain power supply stability under keying. It is a wise designer who properly utilizes the plate supply to power all stages of the rig, including the vfo. I will leave that for you to ponder.....(:+}}..... mebbeee an explanation after xmas or just throw it out for discussion.

Sorry for the bandwidth fellers, but vfo's are an important topic, well worth glowbugging discussions. All comments welcome.

73/ZUT DE NA4G/Bob

Date: Tue, 19 Dec 1995 16:41:41 -0500 (EST)
From: rdkeys@csemail.cropsci.ncsu.edu
To: glowbugs@theporch.com
Cc: rdkeys@csemail.cropsci.ncsu.edu ()
Subject: Happy Holidays/ZUT DE NA4G/Bob
Message-ID: <9512192141.AA103953@csemail.cropsci.ncsu.edu>

To all the fine GlowBug folk.....

Twas the night before xmas, and all through the house, mostly nil creatures were a' stirrin', 'cept the ol' CW Pfarte. He was not bundled up tight in his long winter's cap, but instead had his 'Baldwin's fix'd square upon

his noggin.... 'Twere a slight crackle an' din out fair upon the ether, with a warm yaller glow soft set in his tubes. The ol' '01's were nudging a faint plop o' the regen, when whoa, his ears they did sparkle with joy, for a faint set of dits he did hear, therein. These dits they did jingle, a bit more than the usual, and a smile ... nay a fine grin did on his chin appear. It were T.O.M., himself, to be sure, with a fine 'Erie swing, saying ``Merry Xmas to All'' on that ol' 200 metre QRG. The ol' CW Pfarte, he did hit a reply on the key, the usual two dits, with with the tips of the fingers, and yea, T.O.M. did sign back with his dit..., an' it were as before, many times in the past, a most joyous and happy season, to all, and to all a good nite.

BV/RIP OM
73/ZUT DE NA4G

p.s. Yeah, I knows, me iambic pentameter won't win none o' them thar awards, but, the thought be there, an' Happy Holidays to All. Keeps yer bulbs full of glow and cheer, an' mebbe's we see's ya on da QRG.

Date: Tue, 19 Dec 1995 19:06:05 -0800
From: Bill Turner <wrt@eskimo.com>
To: glowbugs@theporch.com
Subject: Re: Best tubes for a VF0?
Message-ID: <199512200306.TAA15767@mail.eskimo.com>

At 10:15 AM 12/19/95 -0600, rdkeys@csemail.cropsci.ncsu.edu wrote:

>>
>> Hi all,
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>> Yes, I know you're all out shopping, but I've got a question just the
>> same. I have never seen a good discussion of the desired tube
>> characteristics for use in a VF0. What I -have- seen is just about
>> every imaginable tube type used, making me wonder if it matters all
>> that much. So, which is better: triode vs. pentode, sharp-cutoff vs.
>> remote cutoff, high gm vs. not-so-high, etc. I'm about to start
>> reading up on VF0s again for a new project, so any other advice is also
>> welcomed -- it's been a while since I thought about these things.
>>
>> 73,
>> Mike, KK6GM

If you want to use a triode, I would suggest the venerable 6FQ7. I have examined lots of tubes for both long and short term stability in DC-coupled applications, and the 6FQ7 beats 'em all... at least the common

commercial/consumer types. There may be some exotic military types which are more stable, but for an ordinary triode it's a winner.

Part of the reason I suggest it is that DC coupling is perhaps the most demanding application a tube can have in terms of stability. Any tube which does well there will do well in a vfo. The 6FQ7 was originally designed to be used as an RC coupled oscillator in TV horizontal sweep circuits. Because the tube's internal resistance is part of the RC network, it is critically important that the tube characteristics drift as little as possible when the tube warms up and/or ages, and here the tube designers succeeded quite well. So well in fact, that from the time it appeared in TVs until tube TVs disappeared, it was virtually the only type used for that application at all. Few tube types in the history of the craft have been so universally employed.

It is of course, a twin triode, so you automatically have a nice buffer stage available at no extra cost. They were made by the gazillions, so they should be real easy to find. Good luck!

73, Bill W7LZP
wrt@eskimo.com

Date: Tue, 19 Dec 1995 21:53:52 -0800
From: mjsilva@ix.netcom.com (michael silva)
To: glowbugs@theporch.com
Cc: mjsilva@ix.netcom.com
Subject: 1927 radio book for sale or trade
Message-ID: <199512200553.VAA15312@ix2.ix.netcom.com>

I just found a copy of Mary Texanna Loomis' "Radio Theory and Operating", published in 1927. Wouldn't you know it -- I already have a copy, but I bought it anyway, figuring I could find it a good home. So this one is available for trade (looking for other old radio books) or for what I paid for it (\$20 incl. shipping). It's just shy of 900 pages of '01As, '10s, sparks, arcs and other fascinating reading. The cover is separating from the book, but the pages are all well-bound and in good shape. Anybody interested?

73,
Mike, KK6GM

End of GLOWBUGS Digest 52
